Automated Method for High-Throughput LC-MS/MS Quantitation of Testosterone from Serum: An Improved Validated Method
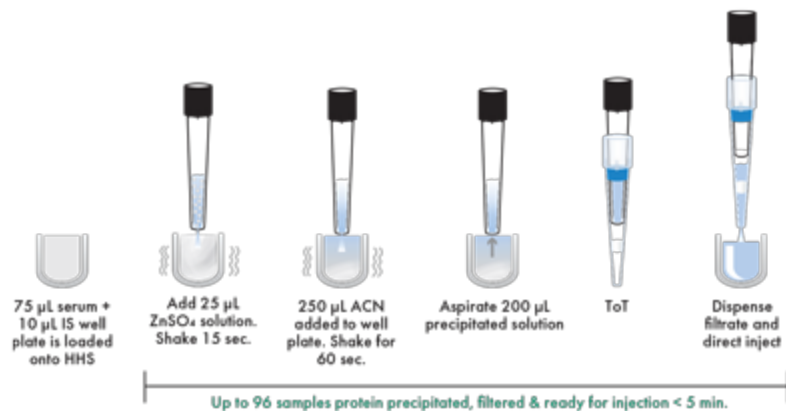
99.5% Recovery of Testosterone
Automation Compatibility: Hamilton Robotics

Analysis of testosterone is helpful when investigating endocrine disorders such as hypogonadism, polycystic ovarian syndrome in women, and early or late onset of puberty in boys. The naturally occurring low levels of endogenous testosterone, found in females and children, has resulted in quantitation by LC-MS/MS being the preferred analytical method for achieving relevant sensitivity and specificity (1). Automated sample preparation of testosterone is desirable to accommodate the high sample throughput, robustness, and efficiency demands of the analysis.

An improved automated method for the extraction of testosterone in serum was developed using $ZnSO_4$ and Low Porosity Filtration Tips- Ultra Pure (LPFT-UP) on a MICROLAB® NIMBUS96 system (Hamilton Company, Reno, NV). The fully automated method incorporates a $ZnSO_4$ solution with acetonitrile on a Hamilton Heater Shaker (HHS) for improved recovery and precision during protein precipitation. LPFT-UP containing high purity filtration media are used to remove matrix interferences and achieve very low limits of detection. Using this quick (< 2 minutes) and effective, DPX patent-pending, Tip-on-Tip (ToT) technology, the LPFT-UP provide an automated filtration alternative to traditional centrifugation and filtration. This method allows for up to 96 samples to be protein precipitated, filtered, and ready for injection in under 5 minutes.

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75 µL serum + 10 µL IS well plate is loaded onto HHS

Add 25 µL ZnSO₄ solution. Shake 15 sec.

250 µL ACN added to well plate. Shake for 60 sec.

Aspirate 200 µL precipitated solution

ToT

Dispense filtrate and direct inject

Up to 96 samples protein precipitated, filtered & ready for injection < 5 min.

References:

1. Run Zhang Shi, Huub H. van Rossum, Raffick A.R. Bowen, "Serum testosterone quantitation by liquid chromatography-tandem mass spectrometry: Interference from blood collection tubes" Clinical Biochemistry 2012, 45, 1706-1709.

Product Information:

Catalog #:DPX170068U

Description: Low Porosity (<1 µm) Filtration tips-Ultra Pure
Ultra pure grade for low detection level methods